REMARKS

Favorable reconsideration and allowance of the above-identified application are requested.

By way of the amendment instructions above, claims 2, 3 and 6 have been cancelled and the subject matter of claim 34 combined with claim 1. As such claim 34 has also been cancelled. Claims 1 and 37 have also been combined so that claim 37 is now in independent form, and claims 39-40 cancelled as redundant. Claims 11 and 12 have been made dependent from the amended version of claim 1 and have been amended so as to cancel redundant expressions therein.

Claims 41-50 are new and are based substantively on originally presented claims 2-10 and 13, respectively, although each is dependent directly or indirectly from independent claim 37.

In addition, claims 51-60 are new and are headed by independent claim 51, with claims 52-60 dependent directly or indirectly therefrom. In this regard, independent claim 51 is similar to original claim 1, but also requires that the integrity of the mat be in creased by means of heat-activated binder fibers. (Please see in this regard, the specification at page 4, lines 23-24, page 7, lines 14-17 and page 8,lines 6-9.)

Thus, claims 1, 4-5, 7-13, 37-38 and 41-60 are pending herein, for which favorable reconsideration and allowance are solicited.

Applicants note at the outset that no art-based rejection was advanced against claim 34. As such, the amended version of claim 1 and all claims dependent therefrom should now be allowable.

The only issue remaining to be resolved in this application is the Examiner's rejection of claim 37 as allegedly "obvious", and hence unpatentable, over Helwig et al

(USP 6,054,022), and further in view of Johannsson et al (USP 6,163,943).[3] Applicants submit, however, that neither Helwig nor Johannsson are appropriate as references against independent claim 37 and the claims dependent therefrom.

Applicants firstly note that the Helwig patent discloses forming a nonwoven glass fiber mat by means of a wet laid process. The specification is filled with teachings on how "suitable hydrophobic agent [is added] to the slurry to cause the chopped fibers to form bundles in the slurry" (col. 2, lines 41 – 44; col. 3, lines 25 – 26; col. 5, lines 16 – 17; col. 5, lines 37 – 40; etc. Also, the specification teaches that the "the hydrophobic agent added to the slurry may comprise a polyalkoxane defoaming agent" (col. 3, lines 56 – 57; col. 5, lines 1 – 3; etc. Significantly, all examples teach the use of a defoaming agent and, further, the claims specifically cover the use of a hydrophobic agent to cause the fibers to form a plurality of bundles in the slurry.

In other words, the entire specification of Helwig teaches ***against*** the use of foam. That is, Helwig actually wants to create fiber bundles in the slurry, whereas while using the foam process the creation of fiber bundles on the foam slurry is impossible. As the Examiner appreciates, one basic difference between a liquid and a foam process is that in liquid process the fibers are able to touch each other and form bundles, whereas in the foam process the fibers are carried by the foam bubbles in such a manner that the formation of fiber bundles cannot take place until the foam has been drawn off through the wire. In other words, the formation of fiber bundles in the foam slurry is not possible. As a consequence, the fibers cannot make bundles between the foam formation and the web formation, which is totally opposite to Helwig's teachings as stated above.

In applicants view, therefore, the teachings of Helwig and Johansson cannot properly be combined.

Moreover, as to Johansson, applicants direct the Examienr's attention to column 3, lines 15 through 20, where it is explicitly disclosed that there are no longer layers of

[3] The amendments and new claims presented herewith are believed to have mooted the other art-based rejections advanced in paragraphs 7 and 10 of the Official Action.

different fibrous webs, but instead merely an integrated fibrous web. In that respect, therefore, the rejection of independent claim 37 is not appropriate.

Applicants note that new claims 51-60 are also patentably distinguishable over the art of record in that no disclosure can be discerned therein of a non-woven mat as defined, for example, in new claim 51 wherein the integrity of the mat is increased by means of heat activated binder fibers. Applicant note in this regard, that there is a distinct difference between a binder powder and fiber. Binder fiber strengthens the mat even before curing, as the fibers crossing each other in the mat create points of attachment int eh mat (i.e., the more fibers, the more attachment points). The mechanism of attachment is such that a water droplet is created in each crossing of the fibers, and the surface tension of water keeps the fibers together. On the other hand, mere powder does not assist in keeping the mat together until it is actually cured.

Every effort has been made to advance prosecution of this application to allowance. Therefore, in view of the amendments and remarks above, applicants suggest that this application is in condition for allowance and Official Notice thereof is solicited.

Respectfully submitted,

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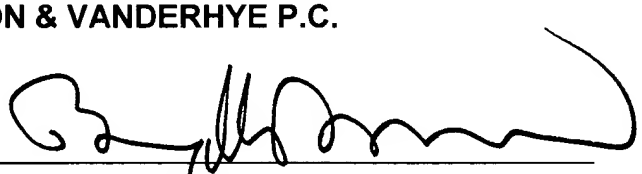
By: 

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APPENDIX I

Marked-Up Version of Specification Paragraph(s) Pursuant to 37 CFR §1.121(b)

Please amend the paragraph appearing on page 4, lines 16-24 as follows:

The method may further comprise producing a second mat from at least a second slurry having a different fiber composition or density than the slurry from (a), and laying the at least a second slurry in a substantially non-mixing manner on the slurry from (a) to produce a composite mat having at least two substantially distant layers with different fiber compositions or densities. Alternatively or in addition the method may further comprise (d) providing at least one surface layer on the mat and affixing the at least one surface layer to the mat with a binder. The method typically further comprises curing the binder from (d) and drying the web in a drying oven. For example (a) is further practiced using heat activated binder [power] powder or fibers in the slurry.

APPENDIX II

Marked-Up Version of Amended Claims Pursuant to 37 CFR §1.121(c)

1. (AMENDED) A composite product comprising an inner layer and outer layers, said outer layers being made from cured non-woven [mat] mats of chopped strands comprising:

a plurality of fibers disposed in a non-woven configuration to define a mat;

at least 20% of said fibers in fiber bundles having between 5 - 450 fibers per bundle and the length of said bundles being substantially the same as the lengths of the fibers forming said bundles; [and wherein]

at least 85% of said fibers of said fiber bundles have a diameter of between about 7 - 35 [500] microns;

at least 85% of said fibers in said bundles have a length of between 5 - 100 mm; and wherein

said fibers in said fiber bundles are held together with a substantially water insoluble sizing; and wherein

said inner layer is formed of at least one of inexpensive fibers, scrap fibers, and material of significantly lower density than said outer layers.

4. (AMENDED) A [non-woven mat] composite product as recited in claim1 wherein at least 10% of the fibers in said fiber bundles comprise reinforcement fibers selected from the group consisting essentially of glass, aramid, carbon, polypropylene, acrylic, and PET fibers, and combinations thereof.

5. (Amended) A [non-woven mat] composite product as recited in claim 1 wherein at least 50% of the fibers in said fiber bundles comprise glass fibers.

7. (AMENDED) A [non-woven mat] composite product as recited in claim 4 wherein at least 85% of said fibers in said fiber bundles are selected from said group.

8. (AMENDED) A [non-woven mat] composite product as recited in claim 1 wherein at least 85% of said fibers in said fiber bundles have a length of between about 7 - 50 mm.

9. (AMENDED) A [non-woven mat] composite product as recited in claim 1 wherein said mat has a density of between about 50-900 g/m^2.

10. (AMENDED) A [non-woven mat] composite product as recited in claim 1 wherein at least 85% of said fibers in said fiber bundles have between 10 - 450 [fibers/bundle] fibers per bundle and a length substantially the same as the length of said fiber bundle, [and a diameter between about 7 - 35 microns;] and wherein the sizing is epoxy resin or PVOH.

11. (AMENDED) A [non-woven mat] composite product as in claim 1, [of chopped strands, comprising: a plurality of fibers disposed in a non-woven configuration to define a mat; at least 20% of said fibers in fiber bundles having between 5-450 fibers per bundle and the length of said bundles being substantially the same as the lengths of the fibers forming said bundles, and wherein at least 85% of said fibers of said fiber bundles have a diameter of between about 7-500 microns; and] wherein said [mat has] mats have a substantially uniform density of less than 75 g/m^2.

12. (AMENDED) A [non-woven mat] composite product as in claim 1, [of chopped strands, comprising: a plurality of fibers disposed in a non-woven configuration to define a mat; at least 20% of said fibers in fiber bundles having between 5-450 fibers per bundle and the length of said bundles being substantially the same as the lengths of the fibers forming said bundles, and wherein at least 85% of said fibers of said fiber bundles have a diameter of between about 7-500 microns; and] wherein said [mat has] mats have a substantially uniform density of between about 50-150 g/m^2.

37. (AMENDED) A non-woven mat [as recited in claim 1] of chopped strands, comprising:

a plurality of fibers disposed in a non-woven configuration to define a mat;

at least 20% of said fibers in fiber bundles having between 5-450 fibers per bundle and the length of said bundles being substantially the same as the lengths of the fibers forming said bundles;

at least 85% of said fibers of said fiber bundles have a diameter of between about 7-500 microns;

said fibers in said fiber bundles being held together with a substantially water insoluble sizing; wherein

said mat is manufactured by a foam process; and wherein

the mat has at least two [regions] layers, which exhibit different physical or chemical properties.

38. (AMENDED) A non-woven mat as recited in claim 37, wherein said mat is manufactured by using a [liquid or] foam process with a headbox to form at least two [regions] layers of said mat having substantially different properties which include at least one of different density, different material, different reinforcement threads, or [and] different reinforcement webs.